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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,252	10/27/2003	Norman C. Fawley	59910P003	4350

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EXAMINER	
BUTLER, PATRICK NEAL	
ART UNIT	PAPER NUMBER
1791	

MAIL DATE	DELIVERY MODE
11/13/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/695,252	FAWLEY, NORMAN C.	
	Examiner	Art Unit	
	Patrick Butler	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 August 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-18* is/are pending in the application.

4a) Of the above claim(s) *11-16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-10,17 and 18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3, 4, 7, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (US Patent Application Publication No. 2004/0060497 A1) in view of Clavin (US Patent No. 4,132,104) as evidenced by Drobny (*Handbook of Thermoplastic Elastomers*, pages 137 and 138).

With respect to Claim 1, Smith teaches bending composite reinforced metal pipe using induction heating (a method of bending a Composite Reinforced Pipe (CRP); placing a heater proximate to a longitudinal location along the pipe where the pipe is to be bent; the pipe having a composite reinforcement comprising a resin an reinforcement fibers coupled thereto; heating a pipe; bending the pipe at the longitudinal location) (see [0006]).

However, Smith does not expressly teach heating the pipe to a temperature above a heat distortion temperature of the resin such that the composite reinforcement is heated to a temperature slightly below a heat distortion temperature of the composite reinforcement.

Clavin teaches applying a material to a pipe (see col. 4, lines 43-59), therefore forming a composite reinforced pipe. The pipe is heated prior bending and the pipe is

bent (see col. 1, line 57 through col. 2, line 5; fig. 1). Clavin teaches heating to a temperature that the coating is not destroyed and is softened and deformed (the composite reinforcement is heated to a temperature slightly below a heat distortion temperature of the composite reinforcement) (see col. 4, line 43 through col. 5, line 2; particularly col. 4, line 65 through col. 5, line 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to heat as taught by Clavin in the process of bending as taught by Smith in order to have the reinforcement softened and deformed but not destroyed (below a heat distortion temperature) (see col. 4, line 43 through col. 5, line 2; particularly col. 4, line 65 through col. 5, line 2).

Since induction heating is used, the metal would be heated more by the induction as evidenced by Drobny (*Handbook of Thermoplastic Elastomers*, pages 137 and 138), paragraph bridging pages 137 and 138). Thus, the temperature of the pipe would be higher than the composite (heating the pipe to a temperature above a heat distortion temperature of the resin).

With respect to Claim 3, Clavin teaches bending at a location then continuing bending at another location (bent incrementally at a plurality of longitudinally displaced locations) (see col. 4, lines 20-42).

With respect to Claim 4, Clavin teaches twelve-inch diameter pipes (see col. 2, lines 50-55) and bending 1° per arc foot (see col. 5, lines 3-5). Thus, a total bend of 1° in an arc foot with a twelve-inch diameter pipe (1° of longitudinal length equal to a diameter of the CRP).

With respect to Claim 7, the pipe is preheated to apply the coating (preheating the pipe) before heating to bend (preheating before heating) (see col. 4, lines 43-65).

With respect to Claim 9, Smith teaches using induction heating (see [0006]).

Claims 5 and 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (US Patent Application Publication No. 2004/0060497 A1) in view of Clavin (US Patent No. 4,132,104) as evidenced by Drobny (*Handbook of Thermoplastic Elastomers*, pages 137 and 138) as applied to Claims 3 and 4 above, and further in view of Lewis (European Patent Application 1 086 760 A2).

With respect to Claims 5 and 6, Smith in view of Clavin teaches making a CRP as previously described with 1° bends achieved in the arc distance equal to the pipe's diameter.

Smith in view of Clavin does not explicitly teach bending with individual bends having ¼ the length of the pipe's diameter.

Lewis teaches achieving cumulative bends with spaced ¼° bends (see col. 9, paragraphs [0029] and col. 10, paragraph [0031]).

In view of Clavin, the spaced ¼° bends would be ¼ of the 1° arc length (longitudinally displaced locations are separated by a distance equal to approximately ¼ of a diameter of the pipe).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Lewis's bend increments with Smith's pipe bending because Lewis teaches that ¼° bends can incrementally achieve the larger overall arc

desired to be obtained (see Lewis, col. 9, paragraph [0029] and col. 10, paragraph [0031]).

Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (US Patent Application Publication No. 2004/0060497 A1) in view of Clavin (US Patent No. 4,132,104) as evidenced by Drobny (*Handbook of Thermoplastic Elastomers*, pages 137 and 138) as applied to Claim 1 above, and further in view of Miller et al. (US Patent No. 4,255,378).

With respect to Claim 8, Smith in view of Clavin teaches making a CRP as previously described.

Smith in view of Clavin does not explicitly teach capping the ends of the pipe.

Miller et al. teach capping the ends of a pipe to be bent (see col. 5, lines 22-29).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Miller's caps with Smith's bending in order to prevent the wall from buckling up upon formation of the curve (see col. 5, lines 22-29).

With respect to Claim 10, Miller's heating of the tube creates hot air in the tube (introducing hot air into the CRP) (see col. 5, lines 22-29).

Claims 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith et al. (US Patent Application Publication No. 2004/0060497 A1) in view of Clavin (US Patent No. 4,132,104) as evidenced by Drobny (*Handbook of Thermoplastic Elastomers*, pages 137 and 138) in view of Wolfe et al (US Patent No. 5,435,867).

With respect to Claim 17, Smith teaches bending composite reinforced metal pipe, but does not expressly teach that the composite's fibers are positioned circumferentially and longitudinally along the pipe (see [0006]).

Wolfe teaches that in order to strengthen a fiber reinforced pipe, the fibers are longitudinal-oriented and circumferential-oriented (see col. 2, line 59 through col. 3, line 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use fibers that are longitudinal-oriented and circumferential-oriented as taught by Wolfe in the composite reinforced pipe of Smith in order to provide diversity in the pipe's strength (see col. 2, line 59 through col. 3, line 2 and col. 3, line 56 through col. 4, line 16).

With respect to Claim 18, Smith in view of Clavin and Wolfe do not appear to explicitly teach that the number of longitudinal fibers is greater than the number of circumferential fibers.

However, in this regard, Wolfe teaches optimizing the direction of fibers to strengthen in particular directions (see col. 3, line 56 through col. 4, line 16). As such, Wolfe recognizes that the ratio of longitudinal fibers to the circumferential fibers is a result-effective variable. Since the ratio of longitudinal fibers to the circumferential fibers is a result-effective variable, one of ordinary skill in the art would have obviously been motivated to determine the optimum ratio applied in the process of Smith in view of Clavin and Wolfe through routine experimentation based upon increasing strength in the longitudinal direction.

Response to Arguments

Applicant's arguments filed 29 July 2008have been fully considered but they are not persuasive.

Applicant argues with respect to the 35 USC § 102(b) rejections. Applicant's arguments appear to be on the grounds that:

1) Clavin does not expressly teach that the composite reinforced pipe has a resin and reinforcement fibers as required by the amended claims.

2) The heat distortion temperature is determined by more than a mere softening of the material as clarified by "Deflection Temperature Testing of Plastics." Thus, Clavin's undisclosed temperature of softening does not provide the newly added claim limitations regarding limitation of heating the pipe above a heat distortion temperature of the resin as recited in lines 6 and 7 of Claim 1.

Applicant argues with respect to the 35 USC § 103(a) rejections. Applicant's arguments appear to be on the grounds that:

3) Lewis does not teach where the bend is positioned along the pipe length.

4) Miller's retaining of air is not discussed by Miller as heating the coating to prevent tearing. Thus, the purpose of the claimed step is not met.

5) The Examiner has not pointed to the teachings within Rhodes in view of Fawley that teach the newly added claim limitations regarding limitation of heating the pipe above a heat distortion temperature of the resin as recited in lines 6 and 7 of Claim 1.

6) Fawley's teaching of minimizing labor and material costs is not directed towards modifying the number of fibers positioned on the pipe.

The Applicant's arguments are addressed as follows:

1, 2, and 5) Applicant's arguments with respect to Clavin teaching a composite reinforced pipe and heating the pipe more than the composite, Rhodes in view of Fawley teaching heating the pipe more than the composite, and Fawley teaching modifying the number of fibers positioned on the pipe have been considered but are moot in view of the new ground(s) of rejection.

3) As recited in the Office Action mailed 30 May 2008:

> In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

3) Moreover, as recited above:

Smith in view of Clavin teaches making a CRP as previously described with 1° bends achieved in the arc distance equal to the pipe's diameter.

Smith in view of Clavin does not explicitly teach bending with individual bends having ¼ the length of the pipe's diameter.

Lewis teaches achieving cumulative bends with spaced ¼° bends (see col. 9, paragraphs [0029] and col. 10, paragraph [0031]).

In view of Clavin, the spaced ¼° bends would be ¼ of the 1° arc length (longitudinally displaced locations are separated by a distance equal to approximately ¼ of a diameter of the pipe).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Lewis's bend increments with Smith's pipe bending because Lewis teaches that ¼° bends can incrementally achieve the larger overall arc desired to be obtained (see Lewis, col. 9, paragraph [0029] and col. 10, paragraph [0031]).

4) The heating of the coating by the pipe in Smith in view of Clavin would necessarily be heated at least by conduction through their interface.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Butler whose telephone number is (571) 272-8517. The examiner can normally be reached on Mon.-Thu. 7:30 a.m.-5 p.m. and alternating Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/P. B./
Examiner, Art Unit 1791

/Monica A Huson/
Primary Examiner, Art Unit 1791